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ABSTRACT

One major view concerning what an orthography should be conforms to Pike's idea that a practical orthography should be phonemic, that is, that there should be a one-to-one correspondence between each phoneme and the symbolization of that phoneme. An alternative view, that of Chomsky and Halle, proposes that the fundamental principle of orthography is that phonetic variation is not indicated where such variation is predictable by a general rule. This paper points out contradictions in both of these views and states that the claims about what an orthography should be need to be carefully formulated and tested. Possibilities for research are outlined in terms of: (1) the linguistic study of orthography, and (2) linguistics and learning to read and write. The former would include identifying the varieties of an existing orthography, formulating constraints on orthography, and formulating relevant rules. The latter would entail cooperation between linguists, educators, and psychologists in examing such factors as poor teaching, preparedness to learn reading and writing, and the efficiency with which individuals handle orthographic systems. (CLK)

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1. PHONOLOGY AND ORTHOGRAPHY

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This paper is prompted by a feeling of disquiet at some linguists' statements about orthography and by a desire to see Australian linguists more actively cooperating in research on the skills of reading and writing.[1]

TWO VIEWS OF ORTHOGRAPHY

Many linguists seem to fall into two opposing camps (1) Some follow Pike's manifesto (1947 : 208): "A practical orthography should be phonemic. There should be a one-to-one correspondence between each phoneme and the symbolisation of that phoneme." This view is represented in Australia, for example, by Leeding and Gudschinsky's recommendations for the phonemic spelling of Australian Aboriginal languages (1974 : 27): "Phonemic distinctions should be maintained for each specific language. Orthographic ambiguity should be avoided."

(2) In the course of expounding generative phonology, Chomsky and Halle proposed an alternative view of orthography (1968 : 49): "The fundamental principle of orthography is that phonetic variation is not indicated where it is predictable by general rule." In this view, no phonetic variation is indicated if predictable, whether variation in the realization of phonemes or variation in the phonemic exponents of morphemes. Hence Chomsky and Halle are able to make their famous claim that English orthography,

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[1] Some of the ideas presented here were tentatively put to a seminar at the Summer Institute of Linguistics, Macquarie University, January 1974, and I am grateful to S.I.L. staff and students for contributing to a lively discussion.

which is at least in some respects morphophonemic, comes "remarkably close to being an optimal orthographic system for English."

Both of these views are unsatisfactory. The writers themselves appear to think so, for they retreat at times from what is presumably their basic approach. Pike's bold assertion that an orthography should be phonemic is followed by a discussion of the social and typographical constraints which may make an orthography non-phonemic (211ff). In the same vein, Leeding and Gudschinsky talk about facilitating the transition from reading an Aboriginal language to reading English, even to the extent of using separate symbols for two allophones of a single phoneme (27). And Chomsky and Halle seem not too enthusiastic about English spelling after all: Chomsky (1970) comments on the closeness of orthographic and lexical representation in English, but prefaces his remarks by doubting whether linguistics can have much to contribute to classroom instruction in reading and writing. Likewise Halle suggests that success in reading has less to do with the nature of the orthography than with classroom atmosphere and teacher and pupil attitudes (1972 : 151-4). Halle is also on record as saying that English spelling "indeed has many difficulties and inconsistencies" (Kavanagh and Mattingly, 1972 : 125).

A second reason for dissatisfaction is that these two views suggest that orthography is, or ought to be, subject to constraints which are not genuine constraints at all. Why ought a practical orthography to be phonemic? Many, if not most, spelling systems are not phonemic and at least some of them seem to be fairly easily learned. Again, Chomsky and

Halle's "fundamental principle" is certainly not a principle of all orthographies, and if the thesis is that it ought to be a principle of all orthographies, the claim has yet to be substantiated. This is not to say that claims about what an orthography ought to be are uninteresting; on the contrary, they are of great importance but they need to be carefully formulated and even more carefully tested. To this end, I propose that we examine some possibilities for research.

THE LINGUISTIC STUDY OF ORTHOGRAPHY

(1) We ought to recognise the variety of existing orthographic systems. Many orthographies are simply not phonemic in any well-defined sense: English and French are notorious examples. But many orthographies defy the principle of not indicating phonetic variation where it is predictable by general rule. In Bahasa Indonesia, for example, the written forms me-, mem-, men-, and meng- represent phonologically predictable variants of a single prefix. In other words, Indonesian orthography does indicate at least some phonetic variation which is predictable by general rule.

The tradition of distinguishing between phonemics and graphemics or between phonology and graphology represents perhaps the best starting point for a proper description of orthographic practice (see for example Gleason 1961, Taylor 1971, Klima 1972). However, even those who are willing to study spelling systems without preconceptions about what linguistic level ought to be symbolised do not always do justice to the extraordinary complexity of the relationship between speech and writing. Notice, for example, that even the orthographies that are held up as phonemic rarely exhibit a true one-to-one correspondence between letters and phonemes.

A genuine one-to-one relationship would exclude any digraph, any capital letter and any symbol such as & or $.[2]

In fact most orthographies are mixtures. Dutch orthography, often admired as a regular and easily acquired system, provides some examples. Dutch voiced obstruents are devoiced in certain contexts, including word-finally; but the voiced plosives b and d are written as b and d even when devoiced word-finally, while the voiced fricatives v and z are written as f and s when word-final. Thus one writes *manden* 'baskets', *mand* 'basket' but *laarzen* 'boots', *laars* 'boot'.[3] Dutch spelling also illustrates the fact that an orthography may contain quite regular spelling rules which actually complicate the relationship between phonological and orthographic representation. Certain Dutch long vowels are written

as double letter before CC or C# e.g. *maand* 'month'
taak 'task'

as single letter before CV e.g. *laken* 'sheet'

while corresponding short vowels are written

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[2] It was pointed out at the symposium that this statement may place an unduly strict interpretation on the phrase "one-to-one correspondence". The possibility of argument over what is meant by "one-to-one correspondence" suggests that formalization of orthographic rules is all the more worthwhile.

[3] This example underlines the difficulty of determining what is a significant generalization (cf. Botha 1971). Is obstruent devoicing a genuine unitary phenomenon in Dutch or is it an unwarranted generalization of two separate devoicing phenomena? The example also raises the question of whether orthographic practice provides any evidence of native speaker intuitions about phonology. Does the Dutch spelling of obstruents demonstrate the separateness of plosive and fricative devoicing or are spelling conventions not necessarily evidence of phonological realities?

as single letter before CC or C# e.g. mand (basket)
tak (branch)

as single letter plus doubled consonant letter before CV e.g. lakken (to lacquer)

The effect of this regular and easily learned spelling rule is to give some phonemically invariant morphemes two orthographic representations, e.g.

[ta:k]	taak	'task'	[ta:kən]	taken	'tasks'
[tɑk]	tak	'branch'	[tɑkən]	takken	'branches'

(2) Recognizing orthographic variety is a step towards formulating the true constraints on orthography, those to which all orthographic systems are necessarily subject. Apart from the obvious physical, biological and perceptual constraints,[4] the only essential feature of a spelling system is that it is symbolic. Orthography is by nature symbolic; it is not by nature symbolic of any particular level of phonological or lexical representation.

(3) Linguists might also think about formalizing the rules of existing orthographies. Many of these rules are sensitive to phonological and even syntactic representation, but are not of course simply calques of phonological rules. (cf. the Dutch example of vowel spelling and, say, the German rule for capitalizing the initial letter of items which are marked as nouns.)

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[4] An orthography must be realized as marks on paper or in some other physical form, it must be such that a human being can write it (if it is a true reading-writing system) and it must be such that a human being can perceive or differentiate its physical components. These three constraints may be thought of as parallel to the acoustic, articulatory and perceptual constraints on speech.

LINGUISTICS AND LEARNING TO READ AND WRITE

The question remains whether some orthographies are better than others. The question is of course not whether some orthographies convey phonological distinctions better than others, but whether some orthographies are easier to learn and use than others. Here the linguist should be cautious but willing to cooperate with educational and psychological experts.

(1) At least some problems in learning to read and write a language such as English may be due to poor teaching. Rather than abdicating, as Chomsky and Halle do when they doubt whether linguistics can contribute much to classroom instruction in reading and writing, we ought to do what we can to overcome teachers' reluctance to come to grips with solid linguistics and to acquaint teachers with what little we know of speech and its development. Not all teachers, for example, seem to appreciate the difficulties of some five-year-olds in equating the initial sounds of dig and drum or of tuna and tummy, or, even worse, in turning trisyllabic [d ə - I - g ə] into monosyllabic [dəg].

(2) An area for more collaborative research is human disposition or preparedness to learn reading and writing. Mattingly (1972) suggests that learning to read depends on developing some sort of linguistic awareness, on becoming to some extent selfconscious about linguistic behaviour. Learning to read an alphabetic orthography may require an awareness of phonemic segmentation which does not come easily and naturally. Preliterate children certainly seem to have difficulty in identifying phonemic segments (as in "I spy" games and pre-reading exercises,

for example) and, in my experience, non-literate Aborigines have difficulty in grasping the notion of a phonological minimal pair. There are interesting possibilities here both for studying emerging awareness and for testing ways of accelerating awareness, such as rhyming and alliteration games. And the results ought to be of value to practical education programmes.

(3) In the third place, there ought to be more careful study of the relative efficiency with which individuals handle orthographic systems. I am not thinking merely of comparisons between the average ages at which English, Finnish and Indonesian children can be said to have learned to read, although such studies ought to involve linguists if only as back-seat consultants. I am thinking also of studies of persistent spelling mistakes made by adult Australians: can these mistakes be explained by the failure of English orthography to reflect a particular level of phonological representation? And also of the difficulties many students have in learning various kinds of phonetic and phonemic transcription of their own language: can these difficulties be explained by the influence of a peculiar spelling system painfully acquired in youth?

Such research might in turn shed light on the narrower concerns of linguistics proper. Once in a while mistakes in the use of standard orthography, or mistakes in transcription made in the beginners' phonetics class, or a non-literate Aborigine's attempt to spell a word, seem to offer a glimpse of what is phonologically real to the native speaker. (Compare Derwing's proposals (1973) for collaboration between psychologists and linguists in assessing the psychological reality of phonological rules and features.) If we are willing to work with psychologists, and even to

listen to them from time to time, we may yet be able to make recommendations about orthographies, and in the process to rescue phonology from irrelevance.

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